



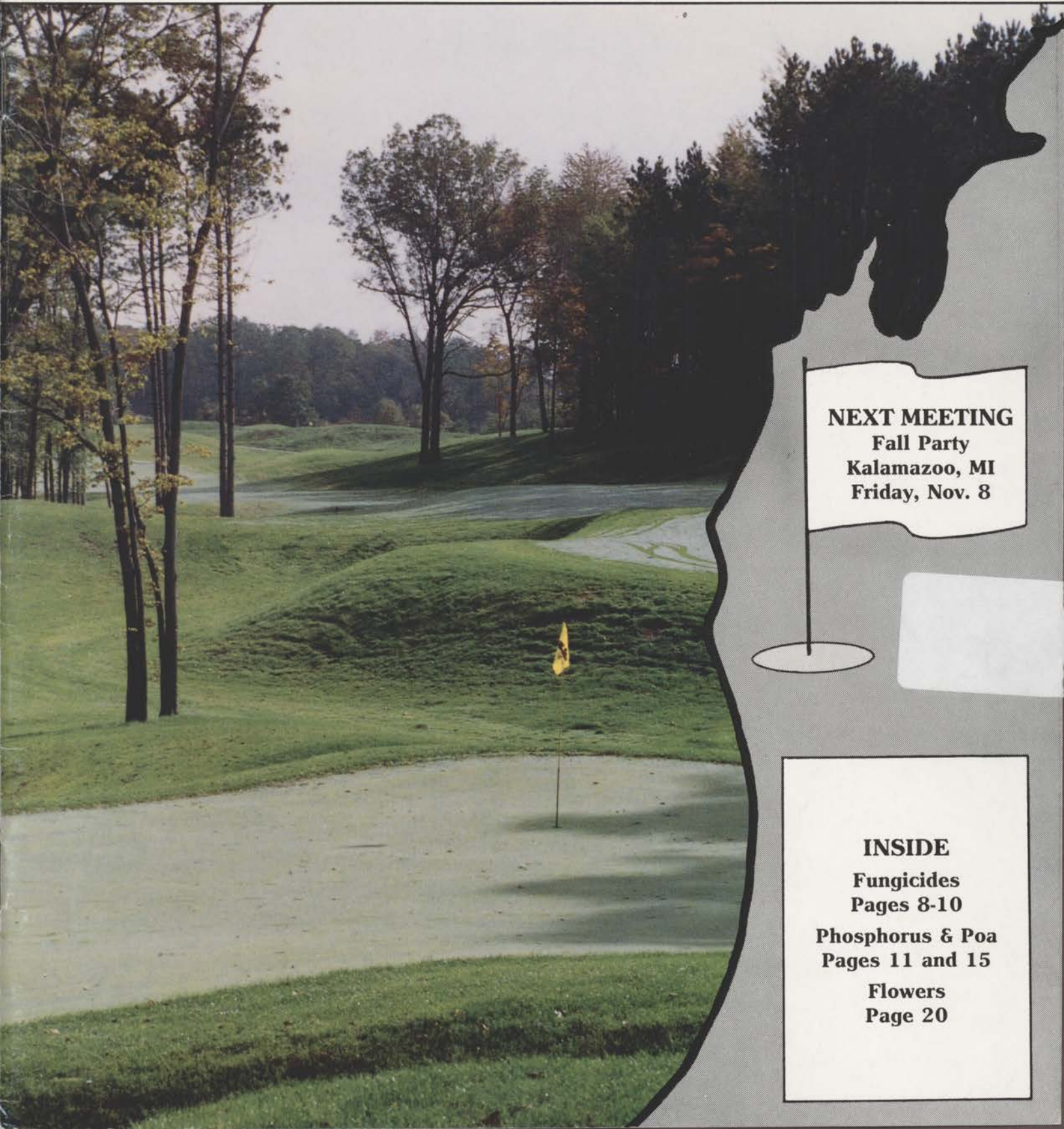
WESTERN VIEWS

Official Publication of the
W.
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Editor — Paul Richter

Autumn 1991

Photo courtesy of Jan Janson



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INSIDE
Fungicides
Pages 8-10
Phosphorus & Poa
Pages 11 and 15
Flowers
Page 20

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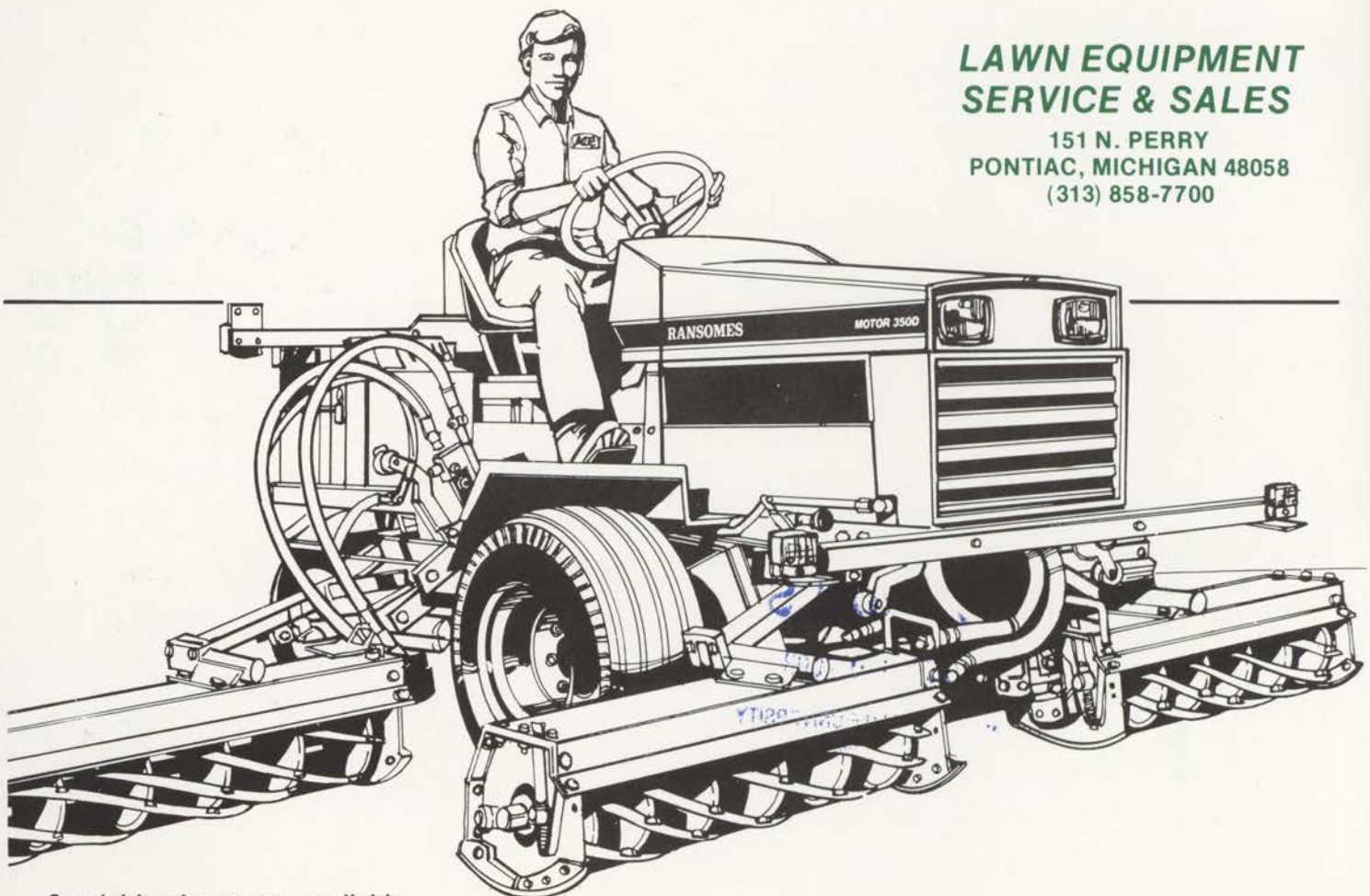
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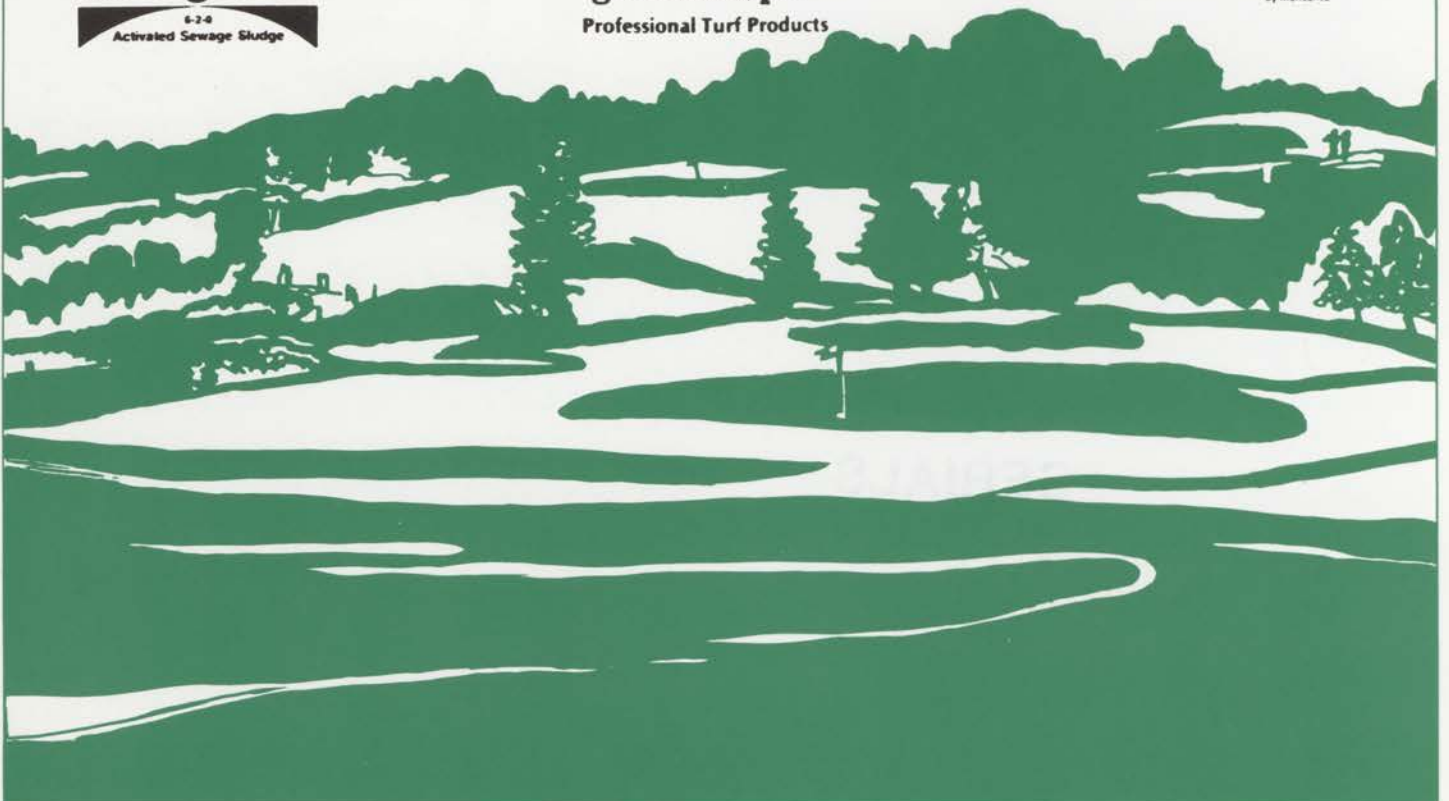
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RICHTER'S RAMBLINGS

Summer 1991, one that will not be forgotten soon, is over. Those that were growing that monocotyledonous monster consumer of mass quantities of water and fungicide, better known as *Poa Annua*, experienced a challenging summer. If it wasn't athenius grub, it was anthracnose or lack of rain or high temperature stress. This year the big mother, mother nature, had us all hopping.

Despite the weather, Bill Fountain did a fine job growing in Railside in Byron Center (just south of Grand Rapids) which opened early in September.

Golf Day was a success, with \$7,000 raised for research at Michigan State University. Stonehedge proved to be a fun challenge, and the weather was outstanding. Many thanks to Charlie Scott and his family and to Bill Fountain for a job well done.

The August meeting at Lake Michigan Hills was poorly attended, which was too bad. Those in attendance experienced a great challenge of golf that was in tremendous condition. My hat is off to Dave Sill and his crew. Love those greens!

Fall is here, the air is crisp, soil moisture is up, the irrigation system blown out, and late fall nitrogen is on. Relax . . . the monster sleeps until spring.

DATES TO REMEMBER

- | | |
|----------------|---|
| November 4-5 | <i>Michigan Golf Summit II</i>
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(800) 777-3521 or (313) 487-0407 |
| November 7 | <i>GCSAA Regional Seminar</i>
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Lansing, MI
(913) 832-4444 |
| November 8 | <i>WMGCSA Fall Party</i>
Kalamazoo C.C.
Kalamazoo, MI |
| December 2-5 | <i>Ohio Turfgrass Conference</i>
Cincinnati, OH
(614) 292-2601 |
| December 2-6 | <i>MSU School of Turfgrass Mgmt.</i>
Kellogg Biological Station
Hickory Corners, MI
(517) 353-0860 |
| January 20-22 | <i>Michigan Turfgrass Conference</i>
Lansing, MI
(517) 353-9022 |
| January 23 | <i>MTF/MSU Environmental Workshop</i>
Kellogg Center
Lansing, MI
(517) 353-0860 |
| February 10-17 | <i>GCSAA International Turfgrass Conf.</i>
New Orleans, LA
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1991 WMGCSA GOLF DAY A SUCCESS

This year's Gold Day fund raiser for the Michigan Turfgrass Foundation held at Stonehedge was a great success. With a total of 162 players enjoying a beautiful September day, our efforts raised more than \$7,000.00 for research to be conducted at Michigan State University.

Our Association would like to thank everyone who participated in this year's unique event. Charlie Scott has done a magnificent job at Stonehedge. I really enjoyed the Stableford points format; did you? We would also like to thank all of the fine vendors that sponsored events and tees. Your support and time is crucial for the continued success that we share at Golf Day each year.

We would also like to thank everyone at Stonehedge and Gull Lake View for their excellent hospitality and service. The prime rib was delicious! The next time you see

Charlie Scott, give him a big thank you as he donated all of the carts for this year's event!

As our profession continues to grow and change on a daily basis, we should give everyone who supports the M.T.F. a round of applause. The money we raise at these events supports research that is needed now more than ever. As a closely knit team that encourages growth in our profession, this research will enable all of us to become better and more successful in our various fields. Thank you for your efforts.

Respectfully,

Bill Fountain
1991 Golf Day Co-Chairman

MTF Thank You

June 27, 1991

Mr. Chris Fochtman
Egypt Valley Country Club
7333 Knapp
Ada, MI 49301

Dear Chris:

On behalf of the Michigan Turfgrass Foundation, I would like to thank the generous Western Michigan Golf Course Superintendents Association for their generous donation towards turfgrass research.

Commitments from dedicated people like your organization have made Michigan State University and the Michigan Turfgrass Foundation recognized as one of the finest turf research centers and educational centers in the country.

Again, thank you,

Sincerely,

MICHIGAN TURFGRASS FOUNDATION

Fritz McMullen
President

WMGCSA ELECTS NEW OFFICERS

At the WMGCSA Annual Meeting held at Spring Lake Country Club on October 2, the following members were elected to office on the 1992 WMGCSA Board of Directors.

President: Chris Fochtman, CGCS - Egypt Valley C.C.

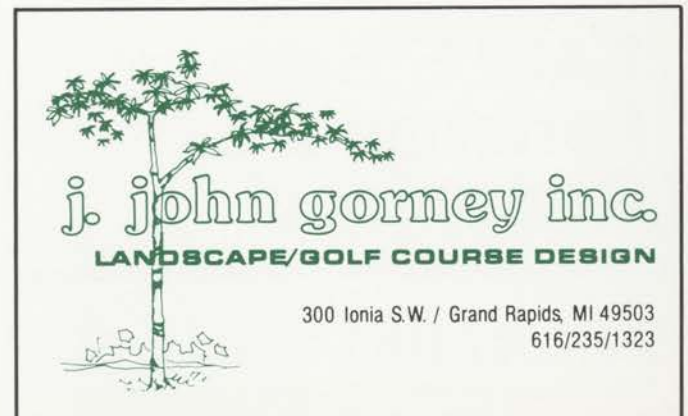
Vice-President: Paul Richter - Spring Lake C.C.

Secretary-Treasurer: Bill Fountain - Railside G.C.

Board of Directors:

Pat Meersman, CGCS - Marywood G.C.

Gary Spahr - Ramshorn C.C.



GCSAA NEWS

JUDICIAL

Supreme Court Decision Stirs Responses - *The Supreme Court decision involving the Town of Casey, Wis. vs. Mortier has sent lawn-care and turf associations scrambling for answers and ways to deal with the repercussions.* The key to the decision was that the FIFRA legislative amendments inadequately spell out federal pre-emption of local ordinances. The court asserted that FIFRA plainly authorizes states to regulate pesticides, but is silent in reference to local governments. This ruling apparently upholds the authority of cities and towns to control and even ban the use of pesticides through permitting schemes, licensing, notification and other usage requirements.

Several interest groups that serve turf and lawn-care professionals are expected to initiate federal and/or state legislative amendments that spell out pre-emptive measures. Cities can be expected to fight these legislative efforts to maintain regulatory authority.

Public education on the use of pesticides and the environmental and societal value of well-maintained turf, coupled with a willingness to initiate public protection measures, are the best ways to improve the position of golf courses with community decision makers. Communication with city and county government authorities is more important now than ever before. For tools to help

you present the facts about golf courses, call the GCSAA communications department at 913/832-4470.

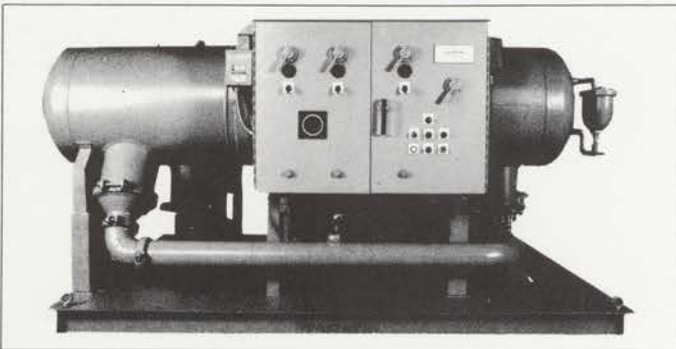
LEGISLATIVE

Bill Would Restrict Youth Employment - *A newly proposed House of Representatives bill would amend the Fair Labor Standards Act of 1938 in regard to the employment of minors.* Reps. Pease (D-Ohio), Schumer (D-NY), and Lantos (D-Calif) are co-sponsors of the legislation, which, if passed, would prohibit minors (those under 18 years of age) from handling pesticide products. The bill would also require employers to report any lost-time accident or illness that occurs to a minor employee in the course of work-related activities.

The bill's language would require minor employees to obtain a work certificate that would include permission guarantees by the child's parents and school officials (school permission is required if the child is working during the school year). When school is in session, minors ages 14 and 15 could work a maximum of 15 hours per week and those between the ages of 16 and 18 could work a maximum of 25 hours per week. Some states already have provisions that are similar to these.

GCSAA plans to submit formal comments on the bill to the Subcommittee on Labor Standards.

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FIFRA Amendments Proposed - A new Senate bill entitled "The Pesticide Health and Safety Act of 1991" would amend several sections of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). If enacted, the bill would require some pesticide labels to include the statement: "EPA registration is not a guarantee of safety. It is a product registration process and not a safety determination."

The bill would also require professional pesticide applicators to be trained in alternative pest management methods and both professional and private applicators to keep records of the date and time of all pesticide applications.

SPANIARD WINS GRANT TO STUDY GOLF MANAGEMENT IN UNITED STATES

A new grant program will make it possible for a young Spaniard to learn the techniques of professional golf course management at a university in the United States.

Cosme Bergareche Pradera is the first winner of the Valderrama Award -- a \$7,000 grant funded by Spain's Valderrama Golf Club -- that will support his studies in turfgrass science at Michigan State University. Pradera, who lives in the city of Guipuzcoa, will enter Michigan State's two-year golf and turf management program this fall.

"This is an exciting new program for us," said Joseph G. Baidy, CGCS, chairman of the GCSAA Scholarship Selection Committee. "The Valderrama Award is the first grant of its kind designed to bring international students to the U.S. for an intensive education and training experience. We hope to develop similar 'exchanges' with golf clubs and organizations from other European, Asian and South American nations that don't currently have universities with formal turfgrass science programs."

Candidates for the award were evaluated by a three-person committee made up of representatives of GCSAA, Valderrama GC and the Royal Spanish Golf Federation. This year's representatives were: Gerald L. Faubel, CGCS, GCSAA immediate past president; Jaime Ortiz-Patino, president of Valderrama GC; and Emma Villacieros, president of the Federation. The committee met and interviewed candidates in Madrid in early June.

GCSAA also offers the Ambassador Award, a scholarship that aids international students who are currently enrolled in a U.S. turfgrass program. This year's Ambassador Award winner was David Coote of Australia, also a Michigan State student.

GCSAA SCHOLARSHIP & RESEARCH COMMENDS GOLDEN TEE CLUB SUPPORTERS

The Western Michigan GCSA was one of 14 chapters providing financial support to GCSAA Scholarship & Research during the foundation's recently completed 1990-91 fiscal year. In addition to the chapter's donation of \$1,000, 11 residents of Michigan were members of the Golden Tee Club, the grassroots support organization for GCSAA S & R.

"Chapter and individual member support are absolutely crucial to our ability to fund turfgrass research and to of-

fer scholarship assistance to future golf course superintendents," said Stephen G. Cadenelli, CGCS, president of GCSAA. "We commend the Western Michigan GCSA and its members for their high level of involvement and assistance."

The Western Michigan GCSA earned a "group" membership in the Golden Tee Club for its contribution. Cadenelli and fellow board members also noted with appreciation the following Michiganders who held individual memberships in the Golden Tee Club:

Kathy M. Antaya-Begauer
Carol Colein
J.A. Dorward
Gerald L. Faubel, CGCS
John L. Kirtland
Thomas E. Mason
Gerald Matthews
Dr. Kenyon T. Payne
William R. Roberts, CGCS
Roy A. Szyndlar, CGCS
Gary C. Thommes, CGCS

Golden Tee Club membership is open to individuals who contribute \$100 or more annually and corporations, clubs, chapters and other organizations that contribute \$1,000 or more annually to support GCSAA S & R. During the past fiscal year, contributions to the Club totaled almost \$20,000.

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FUNGICIDES

How you apply it can be at least as important as which one you use, says famed researcher

by

Kit Bradshaw

Do nozzle type, dilution rates, spray patterns, pH and pressure make a difference when applying fungicides?

"You bet'cha," says Dr. Houston Couch, professor of plant pathology at Virginia Polytechnic Institute and State University. Couch, well known for his book, Diseases of Turfgrass, was the speaker at the Fourth Annual South Florida Workshop and Exposition in Fort Lauderdale April 17.

For two hours, he discussed a checklist of items necessary for the correct application of fungicides. This checklist is important, he said, because golf course superintendents need to improve the effectiveness of the fungicides they are applying to the nation's golf courses.

"With the IQ of Zippo the chimp, a crescent wrench and a screwdriver, you can double the effectiveness of your fungicide application," Couch said.

Superintendents must optimize the applications of their fungicides because they are faced with increased expectations.

"The Stimpmeter is the worst thing that happened to golf," he said.

"They roll the golf ball and tell the guy on the spot what they want. To get the number right, the superintendent will roll the green to harden it up, back up on the watering and lower the cutting height. But biologically, under these conditions, the grass has a real problem. Along comes a fungus that really sort of likes this world, and all it's got to do is snarl and this grass dies."

The problem is even worse because of South Florida's climatic conditions, he added. "A lot of you are growing grass in a part of the world where the Lord did not mean for that grass to grow. You know that. This is where he created fungus to kill the grass."

In order to fight the fungus problems, Couch recommends several procedures.

GRANULAR FUNGICIDES

Although he spent a majority of his time discussing spray fungicides, he did delineate his findings on granular fungicides: mow and irrigate the day before application to have the longest possible interval between application and mowing or watering; and apply the fungicide in the morning while the grass is still wet.

"Granular formulations of non-systemic fungicides require two to three times the active ingredient level of spray formulations to produce the same degree of disease control."

The type of carrier makes a tremendous difference in effectiveness. Get test data on the carrier as well as the active ingredient.

Granular formulation should never be used on home lawns or park applications.

NOZZLE TYPES

Couch is emphatic about not using flood jet nozzles in fungicide applications.

"The flood jet has the worst of all possible worlds," he said, "with big droplet size and lots of aerosol. The material comes through the nozzle, hits the baffle and goes splat. That's equivalent to putting your thumb over a hose. The only good thing you can do with a flood jet nozzle is to take it to a kiln, have it melted down and make it into a doorstop for your office."

He recommends either the flat fan 8002 or the raindrop type nozzles, RA 10 to RA 15 for fungicide applications. He also says fungicides should be applied with 100 percent overlap and the angle of the nozzle on the floating boom should be set at 45 degrees.

"The Chempro floating boom is the hottest thing you'll ever see. It has two manifolds for putting out the same pressure at each nozzle and will give you uniform application. The boom is in a class by itself."

NOZZLE PRESSURE

In Couch's research, nozzle pressure made a significant difference in the effectiveness of the fungicides.

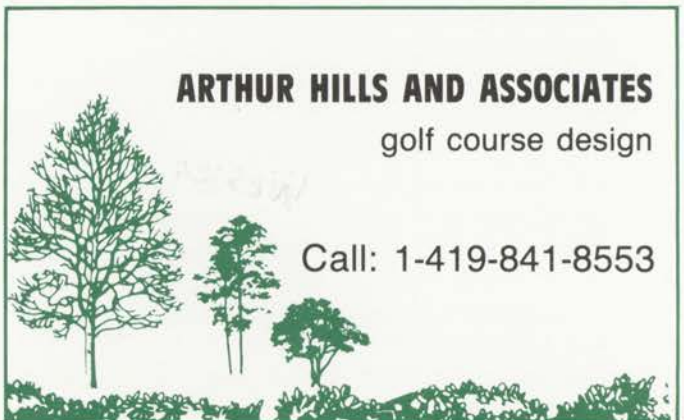
"We used the 8002 nozzles with the right dilution rate of Chipco 26019 to control dollar spot," Couch said. "When we used 10 pounds per square inch, we got 55 percent control, but when we switched to 30-60 pounds, with the same amount of material in the same amount of water, we just about doubled the effectiveness of the fungicide. With Dyrene, the same thing occurred. There was 45 percent control at 10 pounds and nearly 100 percent control at 30-60 pounds."

In order to calibrate the correct pressure, Couch recommends gauges on both the tank and the nozzle ends. "You should be using the Spraycheck method to check your pressure when you apply fungicides. This may not seem important unless it's your prize putting green, it's five days before the big tournament, the nights are in the 90s and the humidity is 150 percent, and one part of the

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boom is killing all the fungus and the other part is killing just some of the fungus. That's when you think about moving up North."

Couch recommends 40-pound pressure for both the flat fan nozzles and the raindrop nozzles.

DILUTION RATES

Forget the old rule, primarily based on the use of mercury fungicides, of 5-10 gallons per 1,000 square feet.

Couch recommends Daconil 2787 at one gallon per 1,000 square feet; Dyrene at 1-2 gallons; Bayleton at 2 gallons; Chipco 26019 at 0.5 to 4 gallons; Banner at 2 gallons; and Vorlan at 1-2 gallons.

"Chipco is hard to mess up," he says. "It's not dilution dependent, so if you went from a half gallon to four gallons per 1,000 square feet, you got some control.

"Dyrene, however, can't be used at four gallons because it's been diluted out of existence and with Daconil, it's dilution dependent, so if you drop down or go up to two gallons, there is a drop in effectiveness.

"Bayleton shouldn't be put in at one or three gallons, but at its optimum rate of two gallons. If you change from the optimum dilution rate with Bayleton, you get less control over the fungus and it doesn't last as long."

IRRIGATION AND RAINFALL

Irrigation or rainfall shortly after application will affect the fungicide, and usually not for the better.

In his research, Couch used Dyrene, Rubigan, Bayleton, and Daconil. He applied the materials to the leaves while

they were wet, allowed the leaves to dry, then irrigated. After three days, he irrigated again.

As a result, Couch said, "with dollar spot control, rainfall before the spray dries, significantly reduces the effectiveness of the contact type fungicides. With Rubigan, if the leaves are washed before the spray dries, it's good-bye Rubigan. With Bayleton, leaf washing before the spray dries does not significantly reduce the effectiveness."

He also concluded that the basic effectiveness of turf-grass fungicide is established by the initial amount of the water used in its spray application.

If the fungicide formulation contains a sticking agent, rainfall or irrigation immediately after the spray dries on the leaves will not appreciably reduce its effectiveness.

pH AND IN-TANK STABILITY

Superintendents need to know the stability of the active ingredient of the fungicide (which usually is supplied by the manufacturer); they need to test for the pH stability of the formulations; and they need to know the pH of the water in the area.

"The lesson here is that if the active ingredient of the product is unstable in alkaline ranges, it will be formulated with a buffer that will skew it toward the acid range," Couch said. "So what you want to find out is if the water you are using will offset what was going on in the first place.

"Dyrene is alkaline sensitive. It loses disease control effectiveness rapidly at 9.5 in the alkaline range. However,

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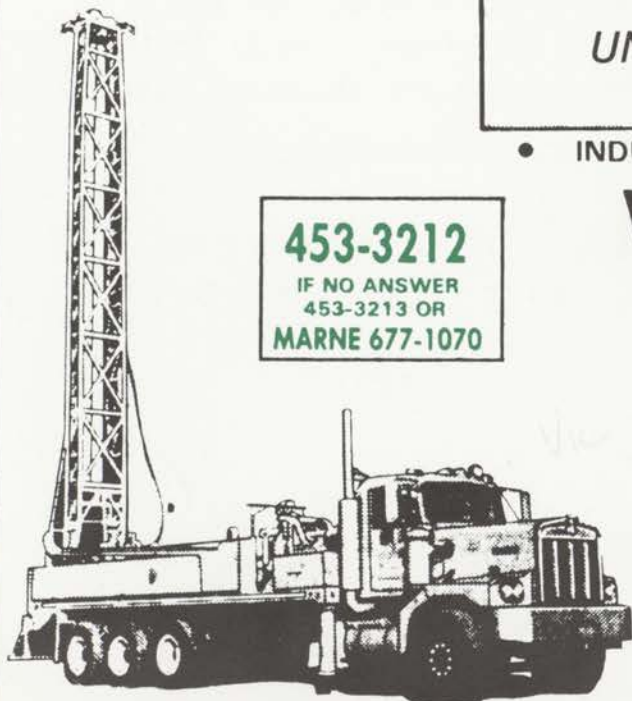
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if it is used immediately in the acid range it doesn't lose effectiveness."

He recommends using a simple pen-type pH meter to avoid mistakes. The ideal pH for a fungicide formulation is 6.5.

But pH is not the only significant factor. The length of time a fungicide mixture is stored can affect it, even to the point of rendering it useless.

During Couch's tests, the fungicide formulations were adjusted and tested immediately. They they were stored for 24 hours at 71 degrees, and tested again.

"If Dyrene is allowed to stand for 24 hours, regardless of pH, there is a significant drop in the effectiveness of the fungicide. The same holds true of Daconil 2787. Although it's stable initially from 3.5 to 9.5 hours, if it is allowed to stand for 24 hours, there is a clumping together of the particles and a loss of effectiveness."

Rubigan is stable from 3.5 to 9.5 initially and remains stable from 6.5 to 9.6 after 24 hours. "But," he said, "at 3.5, the material breaks down significantly. It's acid unstable.

SYNERGISM

A lot of research still must be done on synergism, a positive reaction that occurs when fungicides are combined to improve their baselines. But some products have already proven to exhibit that characteristic.

For instance, Fore and Subdue or Fore and Banol can be used at half their dilution rates and improve their effectiveness through synergistic action.

For dollar spot control, Couch recommends Banner and Dyrene, Banner and Chipco 26019 or Banner and Bayleton at a quarter of the normal rate.

"Not everything (combination of fungicides) works, but when they do, it can increase the effectiveness of the products," Couch said.

"Good golf course superintendents need more training in pesticides and agricultural chemicals because we are more dependent on chemicals than ever before," said Couch in an interview after his lecture.

"In order to stay alive in their profession, superintendents need to attend the local, state, and national education sessions. The information they receive in these sessions is current. By the time it hits the magazines, it's months old and by the time the material is in a book it is about two years old."

Couch feels superintendents also need education in personal relations.

"One of the reasons they need this training is because of a trend I see as bad: the trend toward having golf course managers or having corporations involved with the golf course.

"This takes away the superintendent's ability to make spot decisions. In some cases, a superintendent may need a product to take care of a problem, but he can't get the money released, or can't get it released in time to apply the material and as a result, there's a problem on the course.

"Who gets blamed?" Couch asked rhetorically. "The golf course superintendent, and yet it wasn't his fault."

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POA ANNUA AND PHOSPHORUS

by

Dr. Wayne R. Kusow
Department of Soil Science
University of Wisconsin-Madison

For years, we have been told that generous supplies of phosphorus from soil or fertilizer enhance invasion of turf by *Poa annua* (PA). The reason, it seems, is that PA has a high phosphorus requirement. Satisfying this requirement gives PA a competitive growth advantage over other turfgrasses. How valid are these arguments?

The idea that PA has a high P requirement appears to have arisen from a number of field and greenhouse studies that date back as far as 1937. Let's examine some of these research findings, but without the usual citation of names, dates, places, research methodology, etc. Anyone wishing a list of the references drawn upon here can receive it for the asking.

To begin, let me list some observations that are often used to support the notion that PA is a P-loving plant:

1. Application of the equivalent of 5.9 lb plant available P-1000 ft² (hereafter cited as lb P) as bone meal or 3 lb P as 5-10-5 fertilizer each year for eight successive years increased PA populations in bentgrass 12 to 15% over the unfertilized control treatment.

2. Applying up to 90 lb P to "medium P" pots of soil then seeded to PA increased PA populations 22%, while application of P to a "very high P" soil had no effect on PA populations.

3. Application of P to a pH 4.5 loamy sand soil increased PA growth in pots, but not when the loamy sand was limited to pH 6.5 or when the P was applied to a silt loam soil adjusted to pH 4.5 or 6.5.

4. Application of 1.8 lb P along with 6, 10, or 10 lb N and 1.1 or 3.4 lb S for seven years on colonial bentgrass greens increased the area invaded by PA by an average of 20%.

5. Application of 4.5 to 18.0 lb P over three years on creeping bentgrass and then observing changes in PA over the three succeeding years revealed population increases of 3 to 7%.

6. Application of zero to 3.6 lb P and 3 lb N for two seasons on a golf fairway resulted in PA populations of 63 to 77% the first year and 75 to 83% the second year. Leaf P concentrations in the PA ranged from 0.42 to 0.60%. These contrast with reports that healthy Kentucky bluegrass contains 0.12 to 0.24% P.

7. The optimum P level in PA leaf tissue has been shown in greenhouse studies to be about 0.52%.

On the surface, these research observations constitute some pretty convincing evidence that P application imparts a growth advantage to PA. But let's examine these lines of evidence in more detail and cite some other sources of information. As a general observation, note that in three of the preceding instances we are getting excited about PA population increases averaging 1.5 to 2.8% each year. Recent detailed studies of PA population shifts in turf have revealed natural population changes in the range of 70% over a single season when PA populations

are observed is very critical as far as the results of field research studies on PA are concerned.

In the first research study cited above, it has to be recognized that this work pre-dated soil testing. Hence, we have no way of knowing whether or not annual applications of 3 to 5.9 lb P constituted what today would be considered reasonable rates of application. In any event, application of 117 lb bone meal or 70.2 lb 5-10-5 by no means constitutes a realistic fertilization program for bentgrass.

The next two studies cited were conducted with monostands of PA. Without the inclusion of other grass species for comparison purposes, there is simply no basis for concluding that these studies support the contention that P application imparts a growth advantage of PA. In summarizing their work, the authors themselves concluded that "there is no suggestion that annual bluegrass differs from other bluegrasses in its responses to the major elements, N, P, or K."

In the fourth study previously cited, whether or not P application truly enhanced PA in the bentgrass is difficult to judge. No statistically significant difference levels were reported. Hence, which treatment effects can reasonably be expected to be reproducible rather than the result of random events cannot be ascertained. Perhaps of even greater interest in this study is the fact that application of .1 lb S per season led to an average increase of 92% in the area infested by PA, while P application increased the PA-invaded area by only 20% .1

The fifth study actually involved variable rates of K as well as P. Increasing K rates had as great an influence on PA populations as did P. If one takes the time to read the discussion section of this report, it becomes evident that the authors recognized factors such as dollar spot infection as being a contributing factor in PA invasion of the bentgrass.

The sixth reference suggests major increases in PA populations over one year (63 to 77% PA the first year and 75 to 83% PA the second). Three interesting features of this study are: (1) the original PA population was estimated at 95%; (2) N scheduling had as great an impact on PA populations as did P application; and (3) when averaged across the different N schedules, P applications did not significantly influence PA populations recorded at the end of the study.

References 6 and 7 provide bentgrass tissue analyses that have been interpreted as evidence that PA has a high P requirement. In one such study, at fertilizer P rates where Kentucky bluegrass and bentgrass were still showing growth responses to the fertilizer P, leaf P contents ranged from 0.40% to 0.53%. Thus, the optimum tissue P concentrations for these two grasses appear to be as high or higher than the 0.52% optimum tissue P level reported for PA. If one studies existing literature carefully, it is not difficult to find reports of bentgrass tissue P

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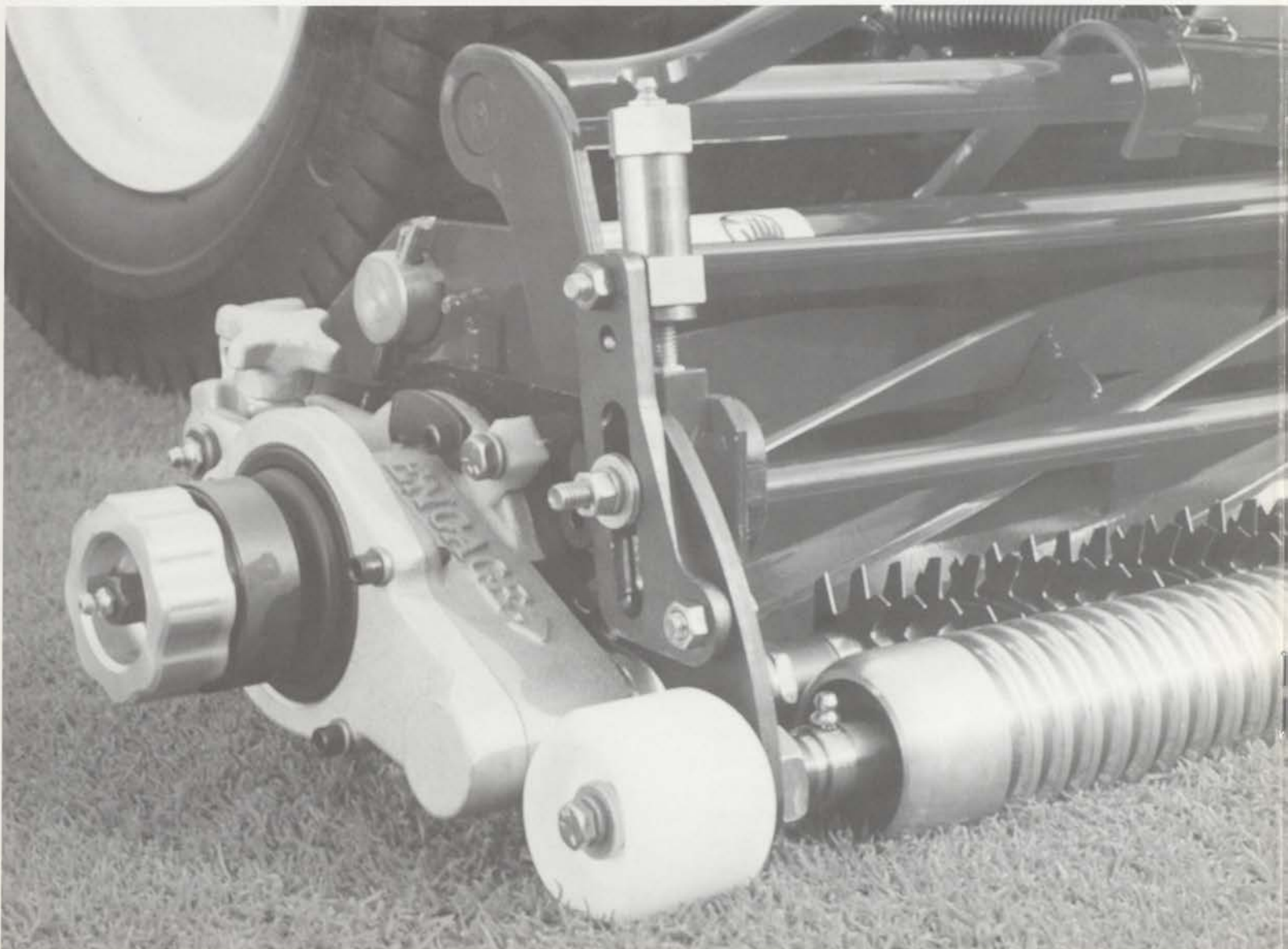
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levels ranging as high as 0.8% in plots where recommended P fertilization practices have been employed.

So what do these research data really tell us regarding the influences of soil or fertilizer P on PA encroachment into turf? My conclusion is that the effects of P have been badly overstated. The influences of P cannot be readily isolated from factors such as soil pH, N scheduling, and applications of other nutrients such as K and S. What appears to be of primary importance is the total fertilization package employed, not whether or not P application is a part of that package.

This brings us to some recent observations on this subject. A study reported in 1986 suggests that:

1. Germination of PA in perennial rye-grass turf is determined by the numbers and sizes of invasion gaps that exist in the turf. This makes sense in that PA seed germination requires an abundance of light.

2. Survival of PA seedlings once germination has taken place is determined by their success in competing for nutrients in the root zone. Application of N overcomes the root zone competition while P and K applications have little or no effect.

A second recent study entailed meticulous recording of PA populations in a bentgrass fairway. The data presented support the authors' conclusion that "P did not exercise the dominant role that N does in determining species composition in a bentgrass-annual bluegrass community." Thus, these two recent studies compliment

one another and relegate to P a secondary influence on PA invasion of turf.

Finally, I am now in the process of finalizing my report on a three-year study of N source effects on PA invasion of creeping bentgrass turf. In plots where soil test P ranged from 65 to 225 lb acre, the soil P levels bore no relationship to PA populations in the turf. Rather, under the conditions of the study, indications were that PA invasion and spread were controlled by the combined effects of earthworm activity and the verdure of the bentgrass. Large numbers of earthworm casts and low verdure apparently created the invasion gaps required for PA encroachment in the bentgrass.

In summary, I firmly believe that the time has come to lay to rest the idea that ample supplies of P from soil or fertilizer inevitably result in higher PA populations in turf. A corollary statement is that starving turf for P is not an effective PA control measure. Rather, anything that creates invasion gaps in turf favors invasion by PA. A radical statement? Hardly. Let me end with a quote from a pioneering and classical 1937 report on PA and its growth requirements:

"The abundance of this pest in golf greens is apparently due largely to the loss of vigor or actual death of the permanent grass in critical periods, which furnishes opportunity for new plants of (annual) bluegrass to invade or completely occupy the injured area."

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WHAT TO CONSIDER FOR SNOW MOLD MANAGEMENT BEFORE THE MERCURY BAN OF 1994

by

Ward C. Stienstra

Extension Plant Pathologist University of Minnesota
Department of Plant Pathology

Winter problems of Minnesota golf turf is a two-part problem: one is disease and the second is injury.

For most, the disease management aspect was well under control and even the injury aspect was being managed. The disease problems are also multiple and several fungi are Typhula and Fusarium, Grey and Pink snow molds. The Grey Snow Mold species most common is *T. ishikarienses* and it is the most difficult to manage with chemicals. The other *T.* species is *incarnata*, and it is more susceptible to fungicide management.

We also have *Gerlachis nivalis* (*Fusarium*) present to some extent every year. The cause of snow molds varies from year to year and from North to South. In seasons of heavy snowfall and cold long winters Snow Scald is present, especially in northern locations; in seasons of cool, wet, cloudy periods, especially in the fall, pink may be the major problem. Since it is not possible to predict with any great accuracy which organism will predominate, and since all are capable of doing extensive damage to fine turf areas, preventive measures are taken in the fall. We seldom have the luxury of a mid-season winter treatment to make up or cover up for a failure.

Present recommendations for snow mold are to apply a mixture of products or apply three fungicides. Mercury as Caloclor at 1 oz., with Chloroneb (Teremec SP) at 2 oz. and PCNB (Terraclor) at 2 oz. has provided 98 to 100 percent disease control for several years at the northern testing location. The better two-way combination of these three products is Mercury plus PCNB or Chloroneb, and the weakest two-way combination was PCNB plus Chloroneb. The performance of other products in winter disease-testing has always been poorer, and results are more varied. The northern testing location (Duluth) is an area prone to snow cover and is mostly *Poa* turf. Sites with more bent and less snow cover should be able to be

managed with this program.

Those who wish to try other products for winter disease management should consider the following. Treatments with mercury are the most reliable, and I expect other programs to allow 5 to 10 percent disease development. The next most consistent product is Daconil at 8 to 16 fl. oz. This rate was tested several times, and little difference was seen. Daconil does not have as much residual control and may run out before the season is over.

This lack of long term control may explain the variability of its control. It also does not have the range of control, and combinations with Daconil may improve the level of control. It needs help with *Fusarium*, and addition of benomyl (Tersan 1991) at 2 oz. should help reduce pink snow mold. Daconil appears to be a product to try in your winter disease program. It can be applied in conjunction with Fungo 50 at 2 oz. or Chipco 26019 at 4 oz. Scotts FFII has performed well for many people, and other formulations of PCNB need to be tested. Reports of Chloroneb used alone often include failure as it does not do well against *T. ishikarienses*.

Those of you who have experience with other control products are encouraged to write me and share your success stories. I suspect the more southern courses have had success with alternate fungicide programs. Those with experience with covers are also on my list to be heard. Has disease been a bigger problem with covers or has the standard fungicide program provided a disease-free environment under covers? My experience is that covers increase the severity of disease and the mercury programs have adequately managed the problem.

Remember that regular mowing in the fall until growth has stopped and avoidance of fertilizer applications that stimulate fall growth will reduce winter disease.

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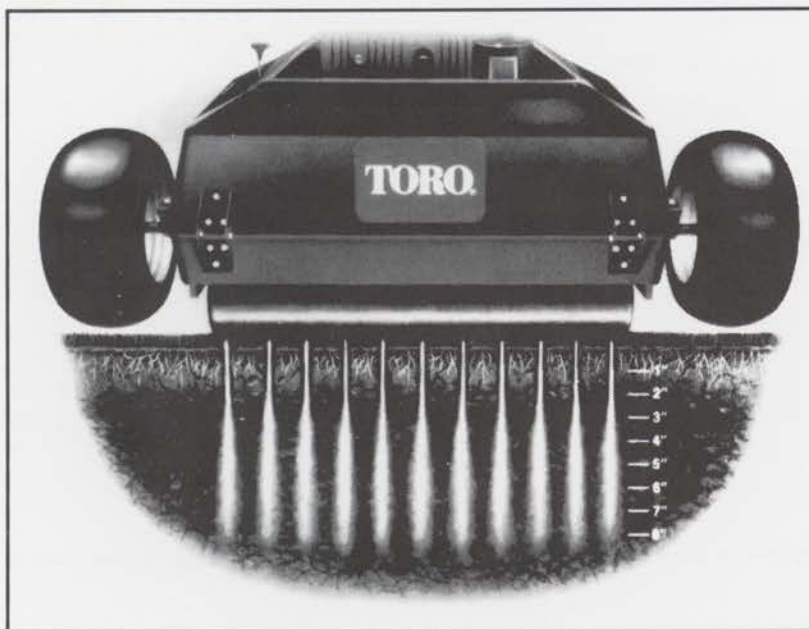
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A COUNTRY CLUB MEMBER'S GLOSSARY OF TERMS

by
Terry R. Smith
Greenfield Country Club
Greenfield, Indiana

Once again we are coming to the end of another season that has brought too much rain in the Spring and then gave us one of the hottest and driest early summers that would stress out the best Superintendent. So, once again, I have tried to come up with the humorous side of our jobs.

One day I was talking to one of our members, who got confused with the terminology that we use every day. So I wrote this glossary of terms which I believe they must think of when we as turf managers use them.

Top Dressing:	When a Superintendent does not let their help go without a shirt.	Ball Mark:	What happens to your ball when it hits a cart path.
Right To Know:	The right to know the stimp meter reading of the green speed every day.	Change Cups:	What my wife changed when she got pregnant.
Winter Play:	The God given right of all Golf Club members.	Sand Pro:	A Golf Pro that's good at getting out of a sand trap.
Green Speed:	Too slow.	Greens Master:	Last year's club champion.
Tee Markers:	What you use to straighten the head of your club when it performs badly off of the tee.	Trap Rake:	What I usually trip over when I get out of a trap.
Ball Washer:	What you use to straighten the shaft of your driver when the ball goes right or left off of the tee.	Ladies Day:	#*#'' *!#! !#!#
Dollar Spot:	What your playing partner spots you when you missed that last five foot putt.	Poa:	I really don't know what it is, but I know I am supposed to complain about it.
Nineteenth Hole:	Conference room in the club house where long discussions take place concerning the practices and future of the Club's Superintendent.	Pythium:	A greek God
Cart Path:	What they put on a golf course for the maintenance equipment to get from hole to hole.	No Carts:	A sign that you always have to drive around to get to your ball.
		Ballmark Repairer:	What's that?
		Irrigation System:	The only thing that will make an approach shot hold.
		Brown Patch:	Why you throw away your under shorts.
		Aerification:	A Superintendent's revenge

FLOWERS

SCIENTIFIC NAME/FAMILY: *Portulaca grandiflora*
Portulacaceae
(por-tu-la-ka gran-di-flo-ra)

COMMON NAME: Rose Moss, Moss Rose, Portulaca, Sun Plant

LEAVES: Prostrate or ascending, with loose hairs at the joints and among the flowers, leaves scattered, terete, 1" or less long, mostly long and prominent beneath the flowers, very succulent.

FLOWER: Flowers 1" and more across, in bright colors, rose, red, yellow, white, striped; sepals broad, short acute; petals obovate, more or less notched at the end. There are singles and doubles. Flowers close in mid-afternoon.

HABIT: 6" to 8" spreading plant.

SEASON OF BLOOM: Early summer to frost.

CULTURE: Sun, hot and dry — where many flowers will not grow.

UTILIZATION: Rock garden, ground cover, edging. It is good for direct seeding in areas where perennials have died down to leave a void.

PROPOGATION: Seed germinates best at a constant 70°F. Seeds can also be sown directly where the plant is to grow.

DISEASES AND INSECTS: Usually none serious.

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We are all at one time or another guilty of some error in judgement. It is what we do with it that counts.

Once you discover your blunder, acknowledge it, avoid its repetition and let go of it. Never again afford it the privilege of keeping your company.

Just for today I will try to live through this day only, and not tackle my whole life problem at once. I can do something for 12 hours that would appal me if I felt I had to keep it up for a lifetime.

Just for today I will be happy. This assumes to be true what Abraham Lincoln said, that "Most folks are as happy as they make up their minds to be."

Just for today I will try to strengthen my mind. I will study. I will learn something useful. I will not be a mental loafer. I will read something that requires effort, thought

and concentration.

Just for today I will adjust myself to what is, and not try to adjust everything to my own desires. I will take my "luck" as it comes, and fit myself to it.

Just for today I will exercise my soul in three ways: I will do somebody a good turn, and not get found out. I will do at least two things I don't want to do - just for exercise. I will not show anyone that my feelings are hurt; they may be hurt, but today I will not show it.

Just for today I will be agreeable. I will look as well as I can, dress becomingly, talk low, act courteously, criticize not one bit, not find fault with anything and not try to improve or regulate anybody except myself.

Just for today I will have a program. I may not follow it exactly, but I will have it. I will save myself from two pests: hurry and indecision.

Just for today I will have a quiet half hour all by myself, and relax. During this half hour, sometime, I will try to get a better perspective of my life.

Just for today I will be unafraid. Especially I will not be afraid to enjoy what is beautiful, and to believe that as I give to the world, so the world will give to me.

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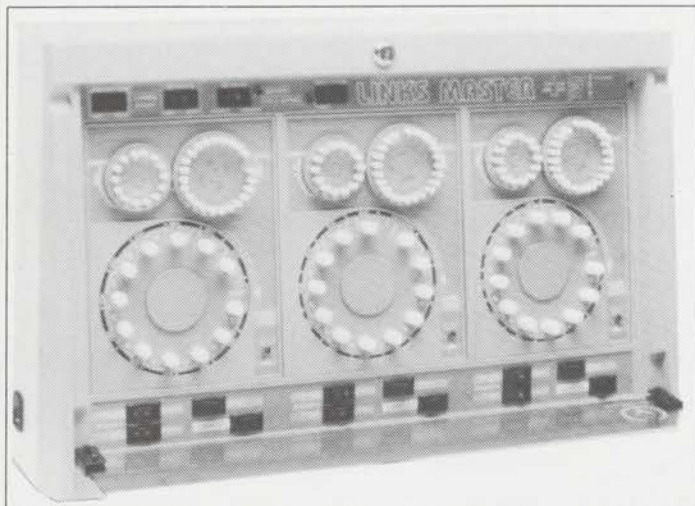
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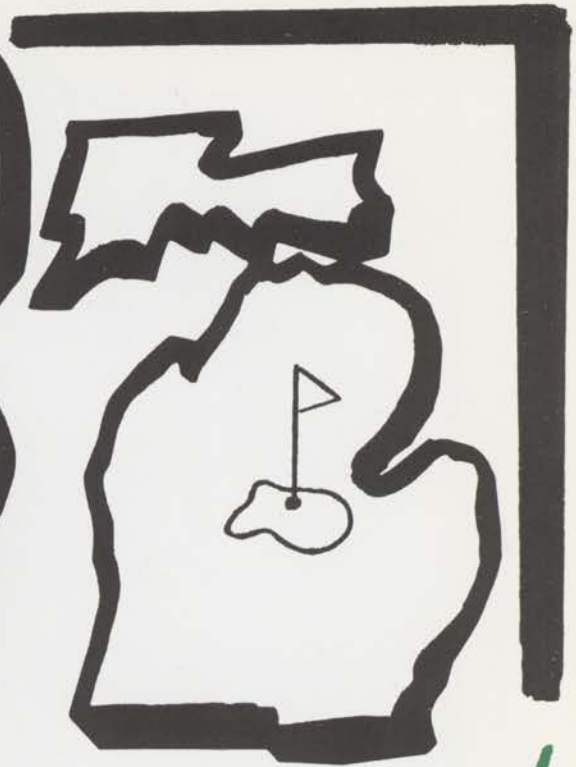
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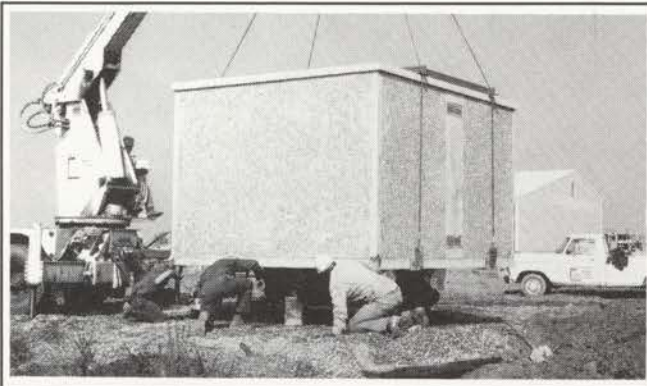
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